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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/056,927 | 01/24/2002 | Brian S. Medower | | 4017 |

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| EXAMINER | |
|---|---|
| MAYES, MELVIN C | |
| ART UNIT | PAPER NUMBER |
| 1734 | |

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/056,927 | MEDOWER ET AL. | |
| | Examiner | Art Unit | |
| | Melvin Curtis Mayes | 1734 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *27 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-11 and 13-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 13-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

(1)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(2)

Claims 9, 13 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitation "the etching." There is insufficient antecedent basis for this limitation in the claim. Etching is claimed in Claim 6.

Claim 13 depends from cancelled Claim 12.

Claim 23 recites the limitation "the bumps." There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 103*

(3)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(4)

Claims 1- 4, 6-11, 14-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards 2001/0016301 in view of Mhetar 6,355,766 and Pan et al. 4,960,680.

Edwards discloses a method of making optical disk from a master comprising: providing a glass master substrate; depositing a photosensitive material (photoresist) on the substrate; exposing the material to laser on a recording table and developing (etching) the photosensitive material to form grooves; forming a first stamper from the master disk; forming a second stamper from the first stamper; and forming replica disk from the second stamper. The deposited photosensitive material and formed grooves may have a depth typically of between 50 and 120 nm. The replica disk may be optical data disk which include data pits, grooves, bumps or ridges and land or land areas and of various types of recordable optical disk such as phase change disk formats. Edwards discloses that the father stamper (first stamper) can be made from the master disk by electroforming using a nickel bath and a mother stamper (second stamper) can be made from the father stamper by electroforming using a nickel bath [0001]-[0075]. Edwards does not specifically disclose using the mother stamper (second stamper) to make a first surface optical disk.

Mhetar discloses that examples of types of polycarbonate data storage media that can be made from an injection molded polycarbonate substrate include first surface media which comprise a protective layer, dielectric layer, data storage layer, dielectric layer and then reflective layer disposed in contact with the polycarbonate substrate. The data storage layer may comprise an optical or magnetic layer of inorganic phase change compounds (col. 4, line 49 – col. 5, line 46).

Pan et al. teach that for optical recording elements, write-once optical recording layers which posses crystallization rate less than 1.0 microseconds, good corrosion resistance, stable amorphous state and capability of high rate and high density recordings comprise an alloy of

antimony, indium and tin of particular compositions. Recordings on the layer are made using the amorphous to crystalline transition mechanism (col. 2, line 47 – col. 3, line 39).

It would have been obvious to one of ordinary skill in the art to have modified the method of Edwards for making optical disks such as phase change optical disks from a stamper by using the method to produce first surface media, as taught by Mhetar, as a type of optical data storage media that is made from an injection molded polycarbonate substrate. By using the mother stamper to form first surface optical media of protective layer, dielectric layer, data storage layer such as inorganic phase change compound, dielectric layer and then reflective layer disposed in contact with the polycarbonate substrate, a first surface optical disk without a defocusing layer over the dielectric layer is formed, as claimed.

It would have been obvious to one of ordinary skill in the art to have further modified the method of the references as combined by providing the inorganic phase change compound as a phase-change material of antimony-indium-tin (SbInSn) alloy of particular composition, as taught by Pan et al., to form a write-once optical disc having a recording layer which posses crystallization rate less than 1.0 microseconds, good corrosion resistance, stable amorphous state and capability of high rate, high density recordings. By providing the phase-change recording layer as SbInSn alloy, as taught by Pan et al., to form a write-once optical disc, phase-change material is provided whose optical phase changes in a positive direction from amorphous when formed to crystalline after being written to, as claimed.

(5)

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards 2001/0016301 in view of Mhetar 6,355,766 and Pan et al. 4,960,680 as applied to claim 4 above, and further in view of Dobbin RE 34,506.

Dobbin teaches that for manufacturing an optical disc master, an alternative to the photoresist mastering system, involves the use of a material which undergoes ablation when exposed to a laser, the advantages over the photoresist process including reduction in process steps such as curing (exposing) and developing (etching) which results in less costly procedure and shorter completion time (col. 2, lines 23-50).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined for making a first surface optical disk by providing the master with grooves using a photoresist material which undergoes laser ablation instead of using a photoresist material which undergoes exposing and etching, as taught by Dobbin, to reduce process steps which results in less costly procedure and shorter completion time. The use of a photoresist material which undergoes laser ablation would have been obvious to one of ordinary skill in the art as an alternative to a photoresist which undergoes laser exposing and etching to form a master with less process steps, as taught by Dobbin.

(6)

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards 2001/0016301 in view of Mhetar 6,355,766 and Pan et al. 4,960,680 as applied to claim 1 above, and further in view of JP 3-105739 Abstract.

Mhetar teaches that the protective and dielectric layers may comprise nitrides, carbides, oxides, etc and combinations.

JP 3-105739 Abstract teaches that an optical disc having improved environmental resistance is provided with a protective film of silicon oxynitride.

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined for making a first surface optical disc by providing the disc the protective and dielectric layers of silicon oxynitride, as taught by JP 3-105739, to improve environmental resistance of the optical disc. The use of silicon oxynitride as a protective layer on the phase-change recording layer would have been obvious to one of ordinary skill to improve environmental resistance.

(7)

Claims 1-3, 8 and 14-22 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al. 5,458,985 in view of Mhetar 6,355,766 and Pan et al. 4,960,680.

Isono et al. disclose a method of making an optical disk by injection molding comprising: providing a glass master substrate; coating the substrate with photoresist; irradiating the photoresist with laser to cut it; developing the photoresist and etching to form a pattern; forming a nickel layer, intermediate layer, second nickel layer (together which form a conductive layer) and electroformed layer on the substrate surface; separating the electroformed layer and conductive layer from the glass master to make a stamper; and using the stamper to injection mold an optical disk (col. 1-5). Isono et al. do specifically disclose using the stamper to make a first surface optical disk.

Mhetar discloses that examples of polycarbonate data storage media that can be made from an injection molded polycarbonate substrate include first surface media which comprise a protective layer, dielectric layer, data storage layer, dielectric layer and then reflective layer disposed in contact with the polycarbonate substrate. The data storage layer may comprise an optical or magnetic layer of inorganic phase change compounds (col. 4, line 49 – col. 5, line 46).

Pan et al. teach that for optical recording elements, write-once optical recording layers which posses crystallization rate less than 1.0 microseconds, good corrosion resistance, stable amorphous state and capability of high rate and high density recordings comprise an alloy of antimony, indium and tin of particular compositions. Recordings on the layer are made using the amorphous to crystalline transition mechanism (col. 2, line 47 – col. 3, line 39).

It would have been obvious to one of ordinary skill in the art to have modified the method of Isono et al. for making optical disks from a stamper by using the method to injection mold first surface media, as taught by Mhetar, as a type of optical data storage media that is made from an injection molded polycarbonate substrate. By using the stamper to form first surface optical media of protective layer, dielectric layer, data storage layer such as inorganic phase change compound, dielectric layer and then reflective layer disposed in contact with the polycarbonate substrate, a first surface optical disk without a defocusing layer over the dielectric layer is formed, as claimed.

It would have been obvious to one of ordinary skill in the art to have further modified the method of the references as combined by providing the inorganic phase change compound as a phase-change material of antimony-indium-tin (SbInSn) alloy of particular composition, as taught by Pan et al., to form a write-once optical disc having a recording layer which posses

crystallization rate less than 1.0 microseconds, good corrosion resistance, stable amorphous state and capability of high rate, high density recordings. By providing the phase-change recording layer as SbInSn alloy, as taught by Pan et al., to form a write-once optical disc, phase-change material is provided whose optical phase changes in a positive direction from amorphous when formed to crystalline after being written to, as claimed.

(8)

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 1 above, and further in view of JP 3-105739 Abstract.

Mhetar teaches that the protective and dielectric layers may comprise nitrides, carbides, oxides, etc and combinations.

JP 3-105739 Abstract teaches that an optical disc having improved environmental resistance is provided with a protective film of silicon oxynitride.

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined for making a first surface optical disc by providing the disc the protective and dielectric layers of silicon oxynitride, as taught by JP 3-105739, to improve environmental resistance of the optical disc. The use of silicon oxynitride as a protective layer on the phase-change recording layer would have been obvious to one of ordinary skill to improve environmental resistance.

(9)

Claims 19-24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita 6,207,247 in view of Mhetar 6,355,766 and Pan et al. 4,960,680.

Morita discloses a method of making optical or magnetic data recording media comprising: providing a stamper having concavities-protuberances (grooves); and injection molding a resin substrate such as of polycarbonate to copy the concavities-protuberances from the stamper. The stamper is prepared from a mother stamper which is in turn prepared from a father stamper having lands and pits of depth of from 10 nm to 1 μm and made by exposing photoresist to laser beam (col. 1-14). Morita does not specifically disclose using the stamper to make a first surface optical disk.

Mhetar discloses that examples of polycarbonate data storage media that can be made from an injection molded polycarbonate substrate include first surface media which comprise a protective layer, dielectric layer, data storage layer, dielectric layer and then reflective layer disposed in contact with the polycarbonate substrate. The data storage layer may comprise an optical or magnetic layer of inorganic phase change compounds (col. 4, line 49 – col. 5, line 46).

Pan et al. teach that for optical recording elements, write-once optical recording layers which posses crystallization rate less than 1.0 microseconds, good corrosion resistance, stable amorphous state and capability of high rate and high density recordings comprise an alloy of antimony, indium and tin of particular compositions. Recordings on the layer are made using the amorphous to crystalline transition mechanism (col. 2, line 47 – col. 3, line 39).

It would have been obvious to one of ordinary skill in the art to have modified the method of Morita for making optical recording media from a stamper by using the method to

injection mold first surface media, as taught by Mhetar, as a type of optical data storage media that is made from an injection molded polycarbonate substrate. By using the stamper to form first surface optical media of protective layer, dielectric layer, data storage layer such as inorganic phase change compound, dielectric layer and then reflective layer disposed in contact with the polycarbonate substrate, a first surface optical disk without a defocusing layer over the dielectric layer is formed, as claimed.

It would have been obvious to one of ordinary skill in the art to have further modified the method of the references as combined by providing the inorganic phase change compound as a phase-change material of antimony-indium-tin (SbInSn) alloy of particular composition, as taught by Pan et al., to form a write-once optical disc having a recording layer which posses crystallization rate less than 1.0 microseconds, good corrosion resistance, stable amorphous state and capability of high rate, high density recordings. By providing the phase-change recording layer as SbInSn alloy, as taught by Pan et al., to form a write-once optical disc, phase-change material is provided whose optical phase changes in a positive direction from amorphous when formed to crystalline after being written to, as claimed.

***Response to Arguments***

(10)

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection, applied because of the amendments to Claims 1 and 19.

As set forth by Mhetar, first surface optical disk media are known in the art. The use of stampers to make various types of optical disks is well known, as set forth by the applied and cited references.

***Conclusion***

(11)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Braitberg et al. 2002/0101816 discloses first surface media either uncoated or with thin coating which has no optical effect.

(12)

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

(13)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
April 5, 2005